Case: A 27 year-old woman presented with fever, left foot swelling after ten days of delivery

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Postpartum fever

Postpartum fever

- Definition:
  - The United States Joint Commission on Maternal Welfare defines
- Postpartum febrile morbidity as an oral temperature of 38.0 degrees Celsius or more on any two of the first 10 days postpartum, exclusive of the first 24 hours.
- low grade fever during this period is common and often resolves spontaneously, especially after vaginal birth.

Differential diagnosis of postpartum fever

- Urinary tract infection
- Wound infection (episiotomy or other surgical site infection)
- Mastitis or breast abscess
- Endometritis or deep surgical infection
- Septic pelvic thrombophlebitis
- Drug reaction
- Clostridium difficile-associated diarrhea
- Complications related to anesthesia

Episiotomy breakdown

- Episiotomy infections are usually localized to the skin and subcutaneous tissue.
- Wound infection is diagnosed in 2.5 to 16 percent of patients after cesarean delivery, generally four to seven days after the procedure.

Endometritis

- Endometritis is more common following cesarean birth than following vaginal birth.
- Fever; uterine tenderness; foul lochia; and leukocytosis, five days of delivery.
- A temperature $\geq$ 38 ºC in the absence of other causes of fever, such as pneumonia, wound cellulitis, or urinary tract infection, is the most common sign.

Endometritis

- Endometritis is the most common puerperal infection, usually developing on the second or third day postpartum.
- Typically, the lochia has a foul odor and the white blood cell count is elevated. Fever and abdominal pain -> severe
- Often, a coexistent surgical wound infection is present.
- A search for retained products of conception is indicated, particularly if bleeding is ongoing.

Mastitis or breast abscess

- Lactational mastitis is a localized, painful inflammation of the breast that occurs in breastfeeding women.
- Breast abscesses develop when mastitis or cellulitis is not treated or does not respond to antibiotic treatment.

Urinary tract infection

- Postpartum women are at increased risk of urinary tract infection.
- Several factors have been implicated, including
  - catheterization, epidural anesthesia, and vaginal procedures.
- Prevalence
  - 2.8 percent after cesarean
  - 1.5 percent after vaginal birth.

Complications of anesthesia

- Complications of general anesthesia, such as aspiration pneumonia, can cause postpartum fever.

Clostridium difficile-associated diarrhea

- More commonly, postpartum women.
- Watery diarrhea up to 10 or 15 times daily with lower abdominal pain cramping, low grade fever, and leukocytosis.
  - These symptoms generally occur in the setting of recent antibiotic administration.

Septic pelvic thrombophlebitis

- Occurs in the setting of pelvic vein endothelial damage and usually associated with
  - endomyometritis, venous stasis, and hypercoagulability.
- However, it is a rare postpartum complication.

Septic pelvic thrombophlebitis

PATHOGENESIS

- The physiologic conditions fulfill Virchow's triad for the pathogenesis of thrombosis
  - endothelial damage
  - venous stasis
  - hypercoagulability

EPIDEMIOLOGY

- The incidence of SPT has fallen
- 1 in 3000 deliveries (1 in 9000 vaginal deliveries and 1 in 800 cesarean deliveries)
  - Cesarean section (1:800 deliveries)
  - Pregnancy (1 in 500 to 3000 deliveries)
  - Pelvic infection (eg, postpartum endometritis, pelvic inflammatory disease)
  - Induced abortion
  - Pelvic surgery (eg, hysterectomy)
  - Uterine fibroids
  - Underlying malignancy
  - Hormonal stimulation

CLINICAL MANIFESTATIONS

- fundal tenderness, lower abdominal tenderness, pelvic tenderness, or mass.
- Pelvic examination is poorly tolerated immediately postpartum.

Ovarian vein thrombophlebitis

- ovarian vein thrombophlebitis (OVT), one week after delivery or surgery.
- Patients appear clinically ill; fever and abdominal pain localized to the side of the affected vein, the flank, or the back. Pelvic tenderness may reflect OVT or an alternative diagnosis such as endometritis.
- Nausea, ileus, and other gastrointestinal symptoms may occur but are usually mild

Deep septic pelvic thrombophlebitis

- Patients with DSPT usually present with fever within three to five days, although the onset may be delayed to up to three weeks
- Patients usually do not appear clinically ill; fever or chills may be the only symptoms,
- Abdominal or pelvic tenderness is notably absent.
- DSPT is frequently a diagnosis of exclusion.

Sequelae and prognosis

- Pulmonary emboli 2%; tend to be small and rarely cause hypoxia.
- There are case reports of other clotting processes with potential morbidity in the setting of SPT
- The mortality due to SPT is very low, due to septic emboli.
- In a study including 69 cases of SPT among nearly 45,000 deliveries, no deaths were observed.
- The rate of recurrent SPT is approximately 3 per 100 patient years.
  - contralateral ovarian vein, left renal vein, or inferior vena cava.
- SPT is not increased maternal or fetal risk in subsequent pregnancies

Journal review

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Clinical Study

Septic Pelvic Thrombophlebitis: Diagnosis and Management

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Diagnostic approach

- A suspicion of SPT should arise when fever, which usually follows a spiking pattern, fails to respond to standard broadspectrum antibiotic therapy.
- Septic pelvic thrombophlebitis was diagnosed in 20 percent of patients with prolonged febrile morbidity, defined as more than five days of fever regardless of appropriate antimicrobial treatment

Diagnostic approach

- Patients often complain of flank and lower abdominal pain, typically described as noncolicky and constant. Pain may be of variable intensity and may radiate to the groin or upper abdomen, and paralytic ileus may occur.
- PE:
  - tender abdominal mass described as rope or sausage-shape may be identified

Image

- CT or MRI
- Criteria for diagnosis include
  - (1) enlargement of the vein involved,
  - (2) low density lumen within the vessel wall, and
  - (3) sharp enhancement of the vessel wall.
- Ultrasonography may have a role in monitoring treatment response

Lab

- The only laboratory test that may aid in the diagnosis and management of the disease is a complete blood count with blood cultures.
- Nevertheless, blood cultures provide identification of amicroorganism in less than 35 percent of the cases

Management and treatment

- Clindamycin+Gentamycin +ampicillin
- “Triple antibiotic regimen” model.
- If fever persists after 5 days, SPT was suspected
- Anticoagulation
- If the imaging showed a small pelvic thrombosed vessel, therapeutic enoxaparin would be continued for 2 weeks.

Heparin dosage

- Standard dosing of unfractionated heparin for management of SPT is an initial bolus of 5000 units followed by continuous infusion of 16 to 18 U/kg for a goal PTT of 1.5 to 2.0 times the patient's baseline

Table 1: Diagnosis and management for presumed septic pelvic thrombophlebitis.

CT or MRI findings	Antibiotics	Anticoagulation	Length of treatment	Final outcome
Right ovarian vein thrombosis	Ertapenem or gentamicin, ampicillin, clindamycin (7 days)	Enoxaparin (1 mg/Kg), warfarin (INR 2.5)	3–6 months warfarin	Repeat CT scan after 3 months. If negative, stop anticoagulation. If still positive for thrombi, anticoagulate for 3 additional months
Pelvic branch vein thrombosis	Ertapenem or gentamicin, ampicillin, clindamycin (7 days)	Enoxaparin (1 mg/Kg)	2 weeks	No repeat imaging necessary
Negative for pelvic thrombi	Ertapenem or gentamicin, ampicillin, clindamycin (7 days)	Enoxaparin (1 mg/Kg)	1 week	No repeat imaging necessary

Thank you